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EDITORIAL

EXIT SPRING FEVER!!

WHEN yestermorn pushed off the coverlet of night and rolled wideawake from its bed—it seemed to be fresher and finer than ever a morning had been. Spring had filled the air with a tenuous, tender, all-pervading vapor—each blade of grass—each bird awing—and every living thing appeared exultant.

Rollicking bees, those "debauchees of dew," careened around, nectar drunk and dizzy. The robin redbreast, "inebriate of air," leaned against a willow wand and puffed his pretty chest with panegyric pride trilling a lover's litany.

And it was not his workaday, everyday song, known to every farmer lad, but a flawless, fluid song, flung to the wind in a new and sheer ecstasy.

Deep in the tight little buttercup buds that bend their heads like bashful babies, arrangements were being excitedly discussed by flocks of young and restless molecules itching for June's call to the colors.

Seed in the moist warm ground had just discovered its strength —yet wisely waited for a soil estate before it sought the sun.

Dandelions, prolific peasants of the pleasant flower world, fringed the roadsides with their dusty gold, and every tree beside, somewhere arranged to have a niche, where "she might wear a nest of robins in her hair."

Soil, brown as the back of a woodthrush and fluffed with the leaven of life at spring, whispered to the rootstock of a frost-hurt rose —"unless you grow in me again I'll be but common clay,"—and suddenly the rootsap set itself in circulation and guaranteed its gayest rose for June.

. . . . . .

But, man, the choicest creature of them all, is ill with what he calls spring fever. There's miasma in his marrow and a bane all

through his blood. Hung is his haughty head with a listless laziness and dragged and drugged his tramp and tread. Over him has fallen an overwhelming cob-web canopy of utter weariness and at night-time he sinks exhausted to his blessed bed.

And even youth grows loggy!

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But wait!—Science is saviour again!!

Announcement has just been made by winter-working savants that spring's depressing ills are only little body signs of a trenchant calcium hunger.

. . . . . .

No longer need youths behave like unweaned calves and those of middle age like Chelsea pensioners. A piece of plaster from the cellar wall, chewed to a salivary magma,—a tube of toothpaste; a piece of chalk; a slab of calcic statuary, Athena's ear or Herculean toe, resolved to paste or powder—a dish of whitewash—or any limpid form of lime—and there you have the antidote.

. . . . . .

Enter chaste calcium!

—Exit the horrid, torrid mess of brimstone and molasses.

—Exit, also, *perhaps,* Spring Fever!

IVOR GRIFFITH.

Allergic Reaction to Dinitrophenol

1. Alpha-dinitrophenol produces skin eruptions in a large percentage (at least 7 per cent.) of those to whom the drug is administered.

2. These eruptions occur when nontoxic amounts of the drug are used.

3. Some of these eruptions are definitely allergic, specific antibodies being produced in some individuals by ingestion of the drug.

4. In at least one case, these antibodies were demonstrable by the Prausnitz-Küstner passive transfer test.

5. It is theoretically dangerous to resume the use of the drug after a skin reaction from its ingestion has subsided.—G. M. Furness, J. A. M. A., *102, 15,* p. 1219.

WORDS, THEIR MEANING AND THEIR USE

ACCORDING to Max Müller, the celebrated philologist, there were, some years ago, about 100,000 words in the English language, exclusive of dialect words and obsolete variants. The number at this time is probably much larger, as with the development of many sciences new words have been invented which have not only found a place in the language of science, but in the industries and professions connected with the sciences, and some of these even have found their way into everyday language in consequence of such use and their expressiveness and applicability in other directions.

The number of words used by the average person is but a small fraction of this great total of words available; authorities differ as to the number actually used, but it is rarely more than several thousand.* Shakespeare with all his wealth of imagery and description used only about 15,000 words, while the Old Testament contains fewer than 6000 different words.

Although we, individually, may not actually use a greater number than one or two thousand words, it is necessary for us to comprehend the meaning of a much larger number, and the difference between an apt scholar and a slow one very often lies in the fact that one understands so much better than the other from his knowledge of the meanings of the words used in the textbooks and in the lectures.

Very few persons realize the fact that we rarely think except in words unless we visualize something as a complex whole, and that a man's grasp of a subject is intimately associated with his breadth of knowledge even along unrelated lines.

Some students realize their deficiencies in this direction but make no effort to improve themselves, either through lack of initiative or ignorance as to how improvement can be made.

The only way to do a thing is to do it and the only way to increase one's vocabulary is to form the habit of systematically looking up all words, the meaning of which is necessary to a correct understanding of a statement, encountered in the daily routine of lectures, quizzes and laboratories or met in reading (newspapers not excepted). Of course it is not possible always to look up every word whose mean-

*One useless dabbler in statistics claims that the average educated man uses a vocabulary of less than six thousand words and the average educated woman about five thousand. He did not mention that the advantage of a rapid turnover of words was distinctly in favor of the latter.

ing is obscure or unknown as soon as it is met with, but this fact will not deter one who is determined to succeed. A small memorandum book and a pencil are all that are required and the true searcher after knowledge when he encounters a word whose meaning is in doubt or unknown will make a note of the word and also of its context in order that he may recall the occurrence and by retracing his mental steps fill in the gap with the desired information.

Of course in looking up the meaning of words a dictionary is required, and as there are dictionaries and dictionaries, a word on this subject may not come amiss. In the early part of a boy's school career it is necessary to know only the bare meaning of words as a rule, but when a young man enters upon a collegiate course, as in a pharmaceutical or medical school it is necessary for him to begin to exercise a more discriminating interest in both the meaning and the origin of the words which he encounters. The small dictionary is all right for emergency work but for the man who really wants to learn the frequent consultation of one of the larger dictionaries either unabridged or encyclopœdic is necessary.

Once acquired, the dictionary habit is irresistible. The many interesting facts which are learned each time a new or an old word is carefully looked up are a constant incentive to continue the system and eventually one comes to acquire, unconsciously at first, a use of new words and a breadth of knowledge which makes him eager to know still more in order that he may have a better understanding of things long past, as well as of things to come.

How many among our numerous students of chemistry know, for instance, that the word "gas" is a purely synthetic or artificial word invented by the chemist von Helmont. How many know the interesting derivations of the following words in every-day use: peculiar from *pecus* L. cattle, meaning private property, because cattle were the earliest form of private property (and by the way, pecuniary is from the same root, meaning wealth, because cattle were the earliest form of wealth); sincere, from *Sine cera* L., without wax, because the Romans used to make old vases look like new by filling up the cracks with wax and so a sincere vase was a genuine one; salary from *sal,* salt, because salt was at one time a valuable commodity; school, from *schole* Gr., because the only persons in olden times who could acquire learning were those of leisure, who did not have to work; trivial, from *trivium* L., three roads, because it was at the cross roads where idlers spent their time talking about things of no importance. A *deliberate*

decision is one based upon a weighing of the facts and arguments involved—and that is the literal meaning of the word *deliberate.* It is derived from Latin *deliberatus,* formed from the verb *deliberare* which is a combination of *de,* a prefix denoting "down," and hence "completely," and *librare* "to weigh." *Library* comes from *libra,* "a balance or pair of scales." In Anglo-Saxon *neah* meant "nigh," "near," and *gebur* meant "dweller," "farmer." These two words were combined into *neahgebur,* meaning, literally, "a near-by farmer." The word appears in Medieval English in the form *neighebour* and in modern English as *neighbor.*

If every student in pharmacy would take the Pharmacopœia, for instance, or any one of his textbooks and carefully go over it from the beginning, looking up every word whose meaning is unfamiliar, he would doubtless find himself consulting the dictionary constantly in the earlier pages, less frequently further along, and as he progressed he would find it rarely necessary to refer to the meanings of words, except, possibly, those of a technical character. It is only by some such means as this that a student or a follower of a profession in these progressive times can keep abreast of his subject. These matters individually are trifles, but "trifles make perfection, and perfection is no trifle." Remember also that evolution is a necessary accompaniment of healthy growth and that the most concise definition of evolution is that of Spencer, who says: "Evolution is an integration of matter and concomitant dissipation of motion, during which matter changes from an indefinite incoherent homogeneity to a definite, coherent heterogeneity and during which the retained motion undergoes a parallel transformation." Start in right now and look up the meaning of every word in this article which you do not fully understand.

The foregoing editorial without slight additions made by the Editor was originally written by Dean Charles H. LaWall for a students' publication and is considered well worthy of repetition here. In connection with the study of word origins the following books are especially recommended as instructive and interesting:

Anderson—New Study of English Words.

Greenough and Kittredge—Words and Their Ways in English Speech.

Marsh—The Origin and History of the English Language and All the Early Literature It Embodies.

Skeat—English Words Compared With Icelandic.

Skeat—List of English Words Illustrated by Comparison With Icelandic.

Trench—Study of Words.

White—Words and Their Uses.

Whitney—Life and Growth of Language and Outline of Linguistic Science.

Picturesque Word Origins. The Merriam Co., Springfield, Mass.

Toxicity of Ethylene Dichloride

Ethylene dichloride ($C_2H_4Cl_2$) is a member of a group of chlorinated hydrocarbons and is similar to carbon tetrachloride, trichlorethylene and chloroform. All these substances are toxic. The order of its toxicity may be inferred from the following list of various solvent intoxicants in terms of diminishing toxicity; benzene, ethylene dichloride, trichlorethylene, carbon tetrachloride, gasoline (boiling point 90 C.), naphtha and Stoddard's solvent.

Ethylene dichloride has come into fairly extensive use as a solvent and extractive. Toxicity begins at about 500 parts of the vapors of ethylene dichloride per million of air. Manifestations are similar to those from carbon tetrachloride. These usually begin with nausea, headaches, mild respiratory irritation and diarrhea but culminate in gross injury (which may be temporary) to the liver with symptoms of, or simulating, guanidine poisoning.—J. A. M. A., *102*, *15*, p. 1250.

ORIGINAL ARTICLES

A COMPARATIVE STUDY OF THE SEEDS AND SPIKES OF CERTAIN CAULESCENT SPECIES OF PLANTAGO*

By Heber W. Youngken

THE AUTHOR was led into this investigation as a result of earlier observations made during his examination of numerous lots of commercial Psyllium seeds purported to have been shipped from Spain and France and labeled "Spanish Psyllium" and "French Psyllium."

For purposes of positive identification of the Psyllium seeds, with the exception of *Plantago Cynops,* he found the study of much of the material dissected from spikes on old herbarium sheets to be worthless and often misleading, partly because most of the mounted specimens had been collected during the flowering rather than the late fruiting period and no doubt, also, in other instances, because of discoloration and alteration of the seed incident to long keeping.

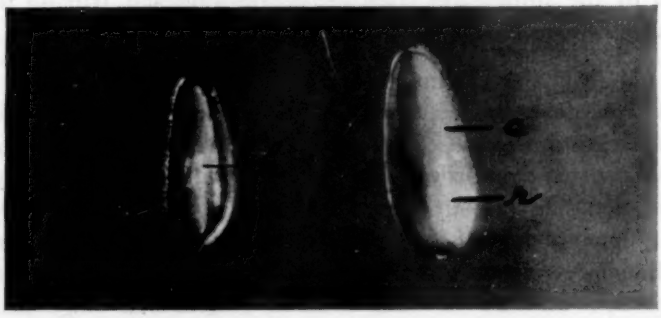

Fig. 1—Seed of Plantago Psyllium x 10, showing concave ventral surface (to left) and convex dorsal surface (to right); h, hilum, c, cotyledons, and r, radicle, showing through transparent seed coat.

The seeds and spikes of *Plantago Psyllium* L., *P. arenaria* Waldst. et Kit. and *P. Cynops* L. represent the materials to be discussed in this report.

*Presented to the General Section, Botanical Society of America, Boston meeting, December 30, 1933.

Plants with mature fruiting spikes and seed were obtained from growers of Psylliums in Spain and France, identified by comparison with authentic herbarium sheets in the Gray and Massachusetts College of Pharmacy Herbaria and the seeds of the imported materials compared with commercial lots of Psyllium, thus enabling the author to make certain identification.

It was found that most of the samples labeled "Spanish Psyllium" were yielded by *Plantago Psyllium,* a few by *Plantago arenaria,* that most of the more recent "French Psyllium" samples were yielded by *Plantago arenaria,* a number by *Plantago Psyllium,* while occasional lots contained mixtures of *P. Psyllium, P. arenaria* and *Plantago Cynops.* It was also ascertained that the seed of *Plantago lanceolata,* an acaulescent species, known in commerce as German Psyllium, and described by the author in a previous paper (1) is being offered on the American market as Spanish Psyllium as well as torrefied abroad and mixed with untorrefied seed of *Plantago arenaria* and offered in this combination to the American trade as French or Black Psyllium Seed.

The spikes described in this article were obtained in part from authentic herbarium sheets, from flowering plants of *P. Psyllium* grown by the author and from dried flowering and fruiting plants furnished by growers of Psyllium in Spain and France.

Plantago Psyllium Seed

The seeds examined were hemianatropous, silky to the touch, ovate to ovate-elongate, larger at one extremity than the other, concavo-convex, light brown to chestnut brown, dark brown along the margin, very shiny, mostly from 1.28 mm. to 2.72 mm. in length, rarely up to 3 mm., and from 0.6 mm. to 1.12 mm. in breadth, the convex, dorsal surface smooth and finely reticulate in some seeds, somewhat transparent, with an elevated, median, longitudinal ridge beneath which the straight embryo is visible as a brown area extending nearly the length of the seed, the hypocotyl being in the broader end and the cotyledons in the narrower end, the concave, ventral surface of the seed showing a large cavity, limited by the border which is raised as a cushion. The edge of the cushion is curved toward and into the groove, forming either a pointed, obtuse or right angle with the internal face of the cavity. In the center of the base of the cavity is an oval white scar representing the hilum. Occasionally the raphe may be present attached to one edge of the seed. A transverse fissure or

groove is usually visible on the convex side and edges of most of the seeds. This is nearer the broader than the narrower extremity and over the point of union of the hypocotyl and the cotyledons. On the broader end of the seed may be seen the dark brown marks of the fusion of the seed coat at the end of the groove, thereby closing it. One hundred seeds weighed 0.072 gm.

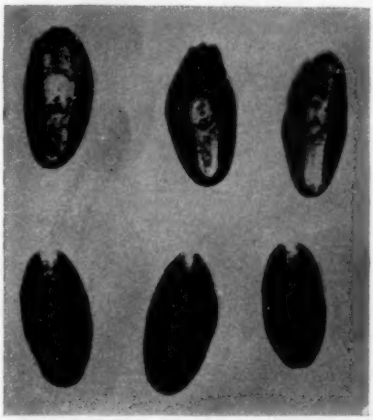

Fig. 2—Seeds of Plantago arenaria x 6.7, showing ventral surface (above) and dorsal surface (below).

Upon soaking the seed in water, the seed coat swelled and the seed became enveloped with a transparent, colorless mucilage. When the swelling phenomenon is observed under the microscope, it is noted that the epidermal cells elongate and their outer and radial walls become transformed to mucilage. Their mucilage swelling factor in twenty-four hours varied from 12 to 16, and in forty-eight hours was up to 35.

Histology—Transverse sections of *P. Psyllium* seed cut through the central region possess a reniform outline and present for examination a spermoderm, endosperm and embryo. The spermoderm shows (1) an outer epidermis of mucilaginous epidermal cells with more or less obliterated walls in glycerin mounts, the radial and inner walls of which swell and disintegrate to form a clear mucilage upon irrigation of the mount with water; (2) a pigment layer with brown amorphous content. Directly beneath the spermoderm lies the broad endosperm, composed of irregular shaped, thick-walled cells with walls

of reserve cellulose, and intercellular air spaces. The outer layer of this region consists of palisade cells which range from 15μ to 34μ, rarely to about 40μ in height. The contents of these endosperm cells consist of aleurone grains and fixed oil. Protoplasmic connections were evident between some of the endosperm cells.

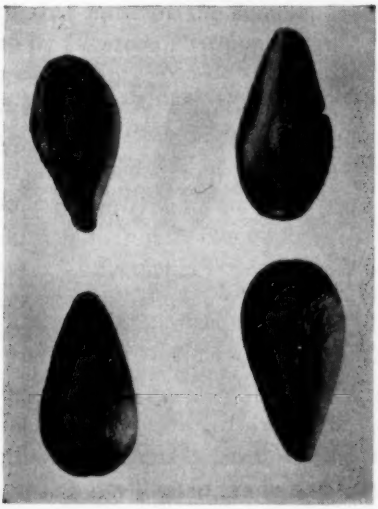

Fig. 3—Seeds of Plantago Cynops Linn. x 6.7. Dorsal view (above), ventral view (below).

The straight embryo lies in the center of the endosperm and consists of two elongated, plano-convex cotyledons and a cylindrical hypocotyl. The cells of the embryo contain aleurone grains of varying shape, up to 8μ in diameter and fixed oil. Three plerome bundles extend through the mesophyll of each of the cotyledons.

Plantago Arenaria Seeds

The seeds differed from those of *P. Psyllium* by the following characters:

They were darker brown to maroon in color, ovate-oblong to elliptical, less shiny, often dull, rough and reticulate on the outer surface, with a median transverse groove or fissure or dent more distinct and usually nearer an equal distance from the two extremities than in *P. Psyllium* and *P. Cynops* seeds. The ventral or concave surface shows averagely a broader cavity than in *P. Psyllium* seed and

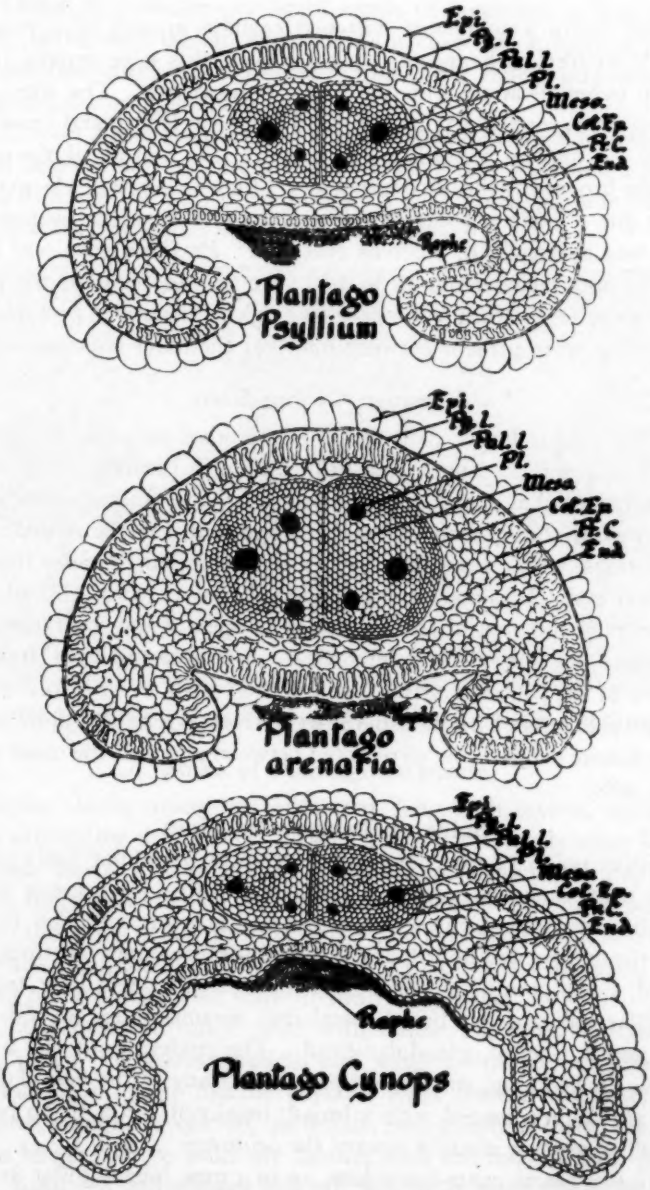

Fig. 4—Transverse sections of seeds of Plantago Psyllium, P. arenaria and P. Cynops. Epi, epidermis and Pgl., pigment layer of seed coat; Pal. l., palisade layer of endosperm, Pl., plerome, Meso, mesophyll, and Cot. Ep., epidermis of cotyledon; Pr. C., protoplasmic connections between cells of endosperm (End.).

the edge forms a somewhat flattened cushion instead of a rounded one. Moreover, as Francois (2) has shown, this edge usually forms a sharp indented angle with the base of the cavity. The size of *P. arenaria* seeds ranged from 1.6 mm. to 3 mm. in length and from 0.96 mm. to 1.5 mm. in breadth. The hilum at the bottom of the cavity was pale brown to whitish occasionally. One hundred seeds weighed 0.0842 gm. Their mucilage swelling factor taken after twenty-four hours was averagely 8, whereas that of *P. Psyllium* seed was averagely 14 and varied from 12 to 16. The palisade cells of the endosperm were from 18μ up to 52.5μ in height. Beautiful protoplasmic connections were present between many of the inner endosperm cells.

Plantago Cynops Seed

This seed is larger than those of the other two species, ranging from 3 to 4 mm. in length and up to 2 mm. in breadth. It is ovate-oblong, enlarged at one extremity and strongly contracted at the other, dull brown to dull greenish-brown, marked with surface wrinkles and reticulations, with a transverse depression nearer the broader than the narrower end. It is convex on the dorsal surface with a broad, deep concavity on the ventral surface which is open at the contracted end. The edges are curved into the cavity. A whitish hilum is found at the base of the ventral cavity. One hundred seeds weighed 0.1649 gm. The palisade cells of its endosperm were from 15μ to 48.75μ in height. Protoplasmic connections were noted between many of the inner endosperm cells.

Spike of Plantago Psyllium

Spike up to 12 mm. long, ovate-capitate, glandular hairy; lower bracts ovate-lanceolate up to 6 mm. long with a herbaceous midrib extending as a long cusp, the lamina hyaline laterally and bearing along the margin and midrib of the dorsal surface numerous uniseriate, jointed, sharp-pointed, non-glandular hairs 2 to 10 cells long and also glandular hairs with a broad, basal cell, an uniseriate, several celled stalk and a 1-celled, glandular head. The epidermis of the hyaline portion showed long, sinuate-walled cells. Many of the non-glandular hairs are dagger shaped with a broad, basal cell and a sharp pointed end cell, curved or straight toward the acute tip.

Upper bracts ovate-lanceolate, up to 4 mm. long, similar in character to the lower but with chloroplastids fewer in the midrib of the proximal portion.

Calyx of 4 similar persistent sepals of lanceolate outline with a green, herbaceous midrib extended as a cusp and a hyaline lamina, the epidermis similar in character to that of the bracts, and beset with non-glandular and glandular hairs.

Corolla hypocrateriform, of 4 gamopetalous, hyaline petals inserted below the ovary, the tube surrounding the ovary and a portion of the filiform, hairy style, the limb with 4 lanceolate, acuminate lobes. The pyxis is membranous, 2-celled and 2-seeded.

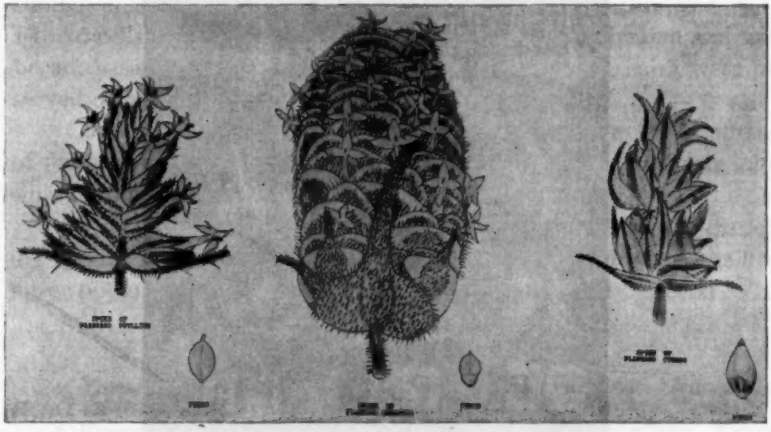

Fig. 5—Spikes and pyxes of Plantago Psyllium, P. arenaria and P. Cynops.

Spike of Plantago Arenaria

Spike oblong-ovate, up to 20 mm. long with several spirals of bracts subtending the flowers. Lower bracts transversely ovate below, lanceolate above, with a herbaceous midrib and hyaline margin, up to 13 mm. long, glandular hairy, with numerous glandular hairs possessing a 2- to several celled uniseriate stalk and a 1-celled head, also many uniseriate, non-glandular hairs of from 2 to 14 cells with broad basal cell and pointed distal cell, some of them dagger-like.

Upper bracts broadly ovate with obtuse summits, each with a broad, green, herbaceous midrib and winged, hyaline margins, the epidermal cells of the hyaline portions long, sinuate and beset with numerous straight or curved, uniseriate, non-glandular hairs up to 10 cells in length, whose walls are thinner than the lumina, each with a broad, basal cell and pointed end cell, also with many glandular hairs with a 2- to several celled, uniseriate stalk and a 1-celled head.

Calyx persistent, of 2 large, spatulate, anterior segments and 2 smaller, latero-posterior, lanceolate segments, each with herbaceous midrib and hyaline margins, the epidermis of the dorsal surface with long, sinuate walled cells and beset with numerous hairs similar to those found on the bracts.

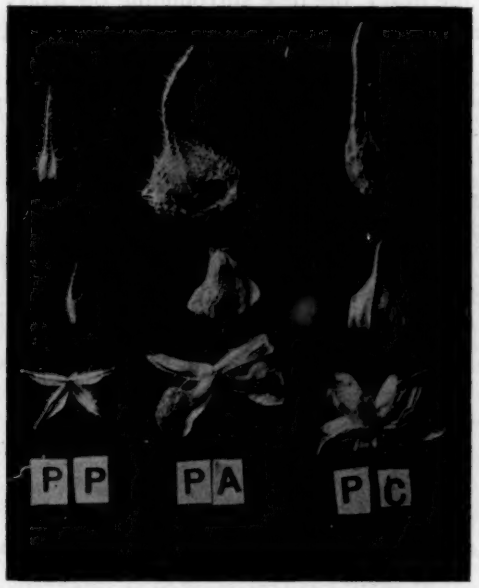

Fig. 6—Top row, lower bracts: Middle row, upper bracts: Bottom row, calyxes of PP, Plantago Psyllium, PA, P. arenaria and PC, P. Cynops.

Corolla hypocrateriform, of 4 petals, the limbs oblong with acute to mucronate summits, the tube of the corolla covering the pyxis and portion of the style. Style filiform and hairy.

Pyxis membranous, 2-celled and containing 2 seeds, dehiscent at about or slightly below the middle.

Spike of Plantago Cynops

Spikes up to 9 mm. long, ovate, less hairy and more xerophytic than those of *P. Psyllium* and *P. arenaria.* Lower bracts ovate-lanceolate, sparsely hairy along midrib and margin, with oval basal portion and long, attenuated cusp, up to 10 mm. long, the midrib herbaceous, the lamina hyaline with long, sinuate walled, epidermal cells.

Upper bracts, ovate-lanceolate, sparsely hairy, with broader hyaline portion than lower bracts, but shorter, the herbaceous midrib terminating in a shorter cusp.

Calyx persistent, with 2 anterior and 2 postero-lateral, sparingly hairy, broadly ovate, cuspidate petals, joined at the base of the pistil, each with a herbaceous midrib and hyaline margin, the latter with deeply sinuate, elongated epidermal cells.

The dorsal surface of the sepals as well as the bracts showed similar uniseriate, curved to straight, papillose, non-glandular hairs, 1 to 10 cells in length, with walls mostly thicker than lumina and with broad, basal cell and pointed end cell. No glandular hairs were observed on these parts.

Corolla hypocrateriform, the tube surrounding the lower portion of the hairy, filiform style, the limb of 4 hyaline, ovate-lanceolate lobes with attenuated ends.

Pyxis larger and more woody in texture than that of the preceding species, 4.5 mm. long, and dehiscent at lower third into a shallow, lower pot and a longer, conical lid region, 2-celled and 2-seeded.

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Massachusetts College of Pharmacy, Boston.

THE LEGEND AND HISTORY OF PASSIFLORA

By J. Hampton Hoch

AMONG the many strange and marvelous things of the New World noted by the early travelers and writers was a most unusual flower, the blossom of the Passiflora. The plant, which the Spaniards found growing in Brazil, was named by them "grenadilla" because, as Monardes (1) says, its fruits somewhat resembled the pomegranate; the English settlers of Virginia called the Passiflora which they found there "maracoc" (2, 3). Legend and superstition fastened to the Passion Flower from the first since its parts were thought to represent the implements of the crucifixion, this, of course, being the origin of the generic and the common name.

Monardes states that the flower strongly resembles the white rose and that its leaves are imprinted with certain figures of Christ's passion, which figures were portrayed most diligently. Although some authors give the "Chronica del Peru,"* written by the Spanish soldier and historian Pedro de Cieza de Leon, as the first place in which the flower was given the representation of the principal instruments connected with the crucifixion of Christ, Avalon (4) was unable to find the passage.

In the year 1610, Giacomo Bosio, an Italian ecclesiastic and historian, the author of the "Istoria della sacra Religione," etc., was busily engaged on his work when "there arrived in Rome an Augustinian friar named Emmanuel de Villegas, a Mexican by birth. He brought with him and showed to Bosio the drawing of a flower so 'stupendously marvelous' that he hesitated making any mention of it in his book. However, some other drawings and descriptions were sent to him by inhabitants of New Spain, and certain Mexican Jesuits, sojourning at Rome, confirmed all the astonishing reports of this floral marvel; moreover, some Dominicans at Bologna engraved and published a drawing of it (5, 6), accompanied by poems and descriptive essays. Bosio, therefore, conceived it to be his duty to present the Flos Passionis to the world as the most wondrous example of the *Croce trionfante* discovered in forest or field. He tells us that the Spaniards call it 'the Flower of the Five Wounds', and it had clearly been designed by the great Creator that it might, in due time, assist in the conversion of the heathen among whom it grows." (7)

*First part of this work was published in Seville in 1553.

An old Spanish legend has it that this plant climbed the Cross, and, although not remembered by the people of Jerusalem, was revealed to St. Francis of Assisi in a vision. Therefore, finding it in the New World was a sure promise that the Indians should be converted.

Bosio, alluding to the half closing of the flower to a bell-like shape, wrote, "It may well be that, in His infinite wisdom, it pleased Him to create it thus shut up and protected, as though to indicate that the wonderful mysteries of the Cross and of His Passion were to remain hidden from the heathen people of those countries until the time preordained by His Highest Majesty." Bosio's illustration shows the plaited and twisted crown of thorns, the three nails, the flagellation column. He says, "The upper petals in New Spain are white, tinged with rose. The filaments above resemble a blood-colored fringe, suggesting the scourge. The column rises in the middle. The nails are above it; the crown of thorns encircles the column; and close in the center of the flower from which the column arises is a portion of a yellow color, about the size of a reale, in which are five spots or stains the hue of blood, evidently setting forth the five wounds. The color of the column, the crown, and the nails is a clear green. The crown itself is surrounded by a kind of veil or very fine hair, of a violet color, the filaments of which number seventy-two, answering to the number of thorns with which, according to tradition, our Lord's crown was set; and the leaves of the plant, abundant and beautiful, are shaped like the head of a lance or pike, referring, no doubt, to that which pierced the side of our Saviour, whilst they are marked beneath with round spots, signifying the thirty pieces of silver."

Other reverent souls, gifted with very penetrating visions or sombre imaginations, saw differing symbolisms and allegories in the various parts of the Passiflora, viz., the ten parts of the floral envelope represent the apostles (minus Judas and Peter), or the lances; the corona represents the crown of thorns, or the halo; the five stamens represent the five wounds, or the hammers used to drive the nails, or the soldiers who inflicted the wounds; the three styles with capitate stigmas represent the three nails; or the stigma represents the sponge; the bud represents the eucharist; the half-open flower represents the Star of the East; the tendrils represent the cords or the scourges; the digitate leaves represent the hands of the persecutors; the root, pro-

longed and descending into the earth, represents the triumph over hell and signifies rebirth.

"Naturally, so marvelous a plant was sought and acclaimed by clerics of all degrees, and by the sick and crippled, and so eager is the eye of faith that after the vine was naturalized in Europe the people long continued to see in it those signs and wonders that we do not. When the Jesuits announced that the objects of the Passion were disclosed in the flower, an indignant botanist, an early Huxley, exclaimed, 'I dare say God never willed His priests to instruct His people with lies; for they come from the Devill, the author of them.'" (8).

The apothecary Paul Contant, master apothecary of Poitiers, was inspired to poetry, and wrote of Passiflora in "Le second Eden" (9):

"La plante salutaire, heureuse, granadille,
Granadille sur qui mais par dévotion
L'on dict qu'on void empreint nostre redemption
Et ses mystères saincts, faisant voir en sa plante,
En son fruit, en sa feuille, en sa fleur excellente,
De notre Rédempteur mort une fois pour tous
Colonne, Croix et Fouet, Lance, Couronne et Clous."

An ingenious composition of the French savant, Rapin,* appeared some years later:

"Caule in sublimi, vallo praetendit acute
Spinarum in morem patiens, o Christe, tuorum
Inscriptus foliis summa instrumenta dolorum
Nam surgens, flore e medio, capita alta tricuspis
Sursum tollit apex, clavos imitatus aduncos" (10).

The English poet, Abraham Cowley (1618-1667), also celebrates Passiflora in his Latin poems (11); he adds that the ten white "leaves" agreed with the white robes of the chaste virgins and with the choir of the Pontiff.

But Thomas Johnson, a botanist and pharmacist of London who edited Gerarde's "Herball", had no sympathy with these fanciful ideas: "The Spanish Friers for some imaginarie resemblances in the floure, first called it Flos Passionis, The Passion floure, and in a counterfeit figure, by adding what was wanting, they made it as it

*René Rapin, a Jesuit teacher of rhetoric, known as the "Second Theocritus," was among the foremost Latin versifiers.

were an Epitome of our Saviors passion. Thus superstitious persons semper sibi somnia fingunt" (3).

Some of the seventeenth century illustrations of these flowers certainly show an exercising of the artists' faith or imagination at the expense of actual fact. However, Donato d'Eremita and Pietro Castelli* each felt obliged to publish illustrations (12, 13) which departed from the fanciful conceptions of certain of their contemporaries. The artists for d'Eremita's works, Fabrus and Colonna, were both members of the Academy of the Lynxes, a scientific society devoted to dissemination of the truth. Brueghel, the famous flower painter of the seventeenth century, was noted for his careful representations and the passion flower as perpetuated in his works is characterized by realism.†

In referring to the native Indian use of the fruit Johnson (3) says, "they open them as they do egges, and the liquor is supped off with great delight both by the Indians and Spaniards (as Monardes witnesseth) neither if they sup off many of them shall they finde their stomack opprest, but rather their bellies are gently loosened." Ray (14) supplements the alimentary data by adding the statement that the root "allays dolours, stimulates the appetite, evokes urine," cools, is a lenitive, as well as being a somnifacient and counteracting poisons, etc.

The empiric use of this plant by the American colonists apparently never attained any considerable vogue although Schoepf (15) mentions the use of Passiflora "in Carolina" for "the Staggers".

It was not until the latter part of the last century that any serious attention was given this drug by the medical profession. The use of other species of the genus is recorded by Merat and De Lens (16), Griffith (17), Porcher (18), and others, but no trials were made with P. incarnata and its properties remained purely speculative. The exaggerated claims made at first were later contradicted and it had largely passed into eclipse. However, more recently there has been a renewed interest in Passiflora as can be seen by the researches of Renon (19), Leclerc (20), Hinsdale (21), and De Nito (22).

*Castelli, a physician and botanist, was a student of Caesalpino; he was professor at Rome until 1634 when he went to Messina and there (1635) laid out the botanical garden in which he cultivated many exotic medicinal plants.

†The Capuchin cress was the only other American plant depicted in Brueghel's works.

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IMPRESSIONS OF EUROPEAN PHARMACY

By Pauline E. Pipkin

WHEN asked for my impressions of pharmacy as I found it in Europe I wondered if I could ever recollect these impressions sufficiently well to give something tangible or interesting. My observations were made during two summers abroad—the first summer on the Continent and the second mostly in the British Isles with some visiting of continental countries. These ideas of European pharmacy were gained here and there—poking around in funny, out of the way places and chatting with queer old fellows who kept the small chemist shops; interviewing managers of European branch houses of American firms such as Bristol Myers, Lehn & Fink, Burroughs Wellcome, Coty, Houbigant, Hudnut, Bourjois, etc.; talking with laboratory men doing research work in great laboratories such as the Pasteur Institute; and struggling with my limited knowledge of French with girls in the perfume shops of Paris. These were each of them interesting experiences—contacts here and there which gave me an insight into their methods of practising pharmacy; their attitudes toward American methods; their aims; their ideals. I found the people in shops and pharmacies most cordial with a few possible exceptions, and they seemed eager to learn something of American pharmacy.

Allow me to say in the beginning that I was much impressed with the great difference in European and American methods. The word "drug store" is unknown abroad and seems to be purely an American institution conducted along revolutionary lines according to European standards. In America our slogan, "Your Druggist Is More Than a Merchant" well expresses our effort to tell the layman that the American pharmacist is really a professional man. In Europe there is no need for such a slogan. I regret to admit that we pay too little attention to this very important professional atmosphere. The average American pharmacist is a merchant first and a pharmacist as a secondary consideration. Perhaps keen competition is to blame; maybe it is a lack of high standards in state laws governing pharmacy; perhaps we have allowed those to enter pharmacy who were not pharmacists at heart; perhaps we pharmacists have not carried our standards higher each year as the medical profession has done. But whatever the cause, American pharmacy does not have the professional attitude of European pharmacy.

In most European countries it seems that a man or woman chooses pharmacy as a profession and is not interested in merchandising. This attitude certainly makes the life of the European a bed of roses compared to the American if considered purely from a professional angle. Yet the American has his compensation in a larger bank account (if he survives competition). Our pharmacist must be a professional man governed by the ethics of the medical fraternity; he must be a keen merchant; a specialist in advertising; a display expert; a bookkeeper; a manager of men; a smart buyer of merchandise; a salesman; a fountain caterer; a tobacconist; a beauty erpert; a first aid man in case of accident—all rolled into one —if he is to be a successful American druggist. And we Americans think of a drug store as just that sort of an institution—a place where we can have a prescription compounded with professional skill; where we can buy our favorite blend of tobacco at the right price; where we may select a rare perfume; where we may seek expert advice on the most becoming shade of rouge; where we may have our fountain pen repaired; where we can enjoy a delicious luncheon; where we can buy stamps even on Sunday! In America "drug store" means much more than a mere place to buy drugs. And I would not censure the American for adding these lines of merchandise if they are profitable. With high rentals and increasing operating costs the pharmacist is forced to sell almost anything that is profitable and that will help pay the rent. Certainly we must separate our prescription departments from these commercial lines and thus safeguard the heart of American pharmacy.

But not so in Europe. Instead of the sign "drug store" we find the pharmacy or chemist shop in England; the *pharmacia* in Italy; the *pharmacie* in France; or the *apothetik* in Holland. And the sign means just that—a real prescription shop for compounding prescriptions and dispensing drugs. I was rather amused to find in the delightful little town of Killarney, Ireland, a chemist shop prominently displaying the familiar Rexall sign. I wondered if this pharmacist too is becoming conscious of controlled merchandise in this peaceful little town where one would suppose "cut prices" to be a thing unknown.

The chemist shop is usually a small shop and the owner does all the dispensing with the possible help of an apprentice who may some day become a pharmacist. This chemist not only compounds prescriptions but in many instances he is equipped to do various types

of analytical work such as blood counts, Wassermann tests and urine analyses. I found almost every shop in Paris qualified for these routine tests. The chemist often lives in the rear of his shop or upstairs and he always has a night bell which makes him available at all hours. This seems a much better plan than our sixteen and eighteen-hour days in the drug store necessitating two shifts and increased overhead expense. Parisian pharmacists have a splendid plan which I think might be adapted in this country. Such a plan might have complications with American politics and no doubt the French have limitations with which I am not familiar. But it seems the French Government grants permits for pharmacies only where they are needed and therefore eliminates unnecessary and often devastating competition. An example of this evil has just been terminated in my own city. An eastern chain organization located a store next door to our own which had long been established and was taking care of the volume of business for this location. Just eighteen inches between competitors is not an ideal situation and certainly not best for pharmacy. I am happy to say that the chain store is no more but one recalls the needless waste that went on for several years. In France only one "pharmacie" in each district remains open on Sunday or rather has a notice posted on the closed door stating that the pharmacist is available by the bell. All other pharmacies in the district are closed and have a notice on their doors directing one to the open shop. The pharmacist who is available may not be called during the day and can thus enjoy a rest yet be ready for real need.

I had quite an interesting experience in Amsterdam, finding the pharmacist open one Sunday afternoon. In crossing the English Channel the night before I had acquired a good-sized cinder in my eye and suffered with it all the next day. As dusk came on I set out to purchase an eye cup and Boric acid solution. Imagine my dismay to find all pharmacies closed tight. Finally an obliging policeman directed me to a small "apothetik" and I understood that it would be open. After walking what seemed like miles I found the place—but closed! My knowledge of Dutch is very, very limited but I finally made out from the note on the door that by ringing the bell I might get service. A bright young girl answered the bell and began to jabber in Dutch. I pointed to the offending eye and thought I clearly indicated my needs. She never quite understood the part the eyecup played but I at length conveyed to her "Liquor Acidum Boricum" and she smilingly poured the solution from a large gallon bottle.

I found that her father was the apothecary and she the apprentice. I showed her my ring from the Philadelphia College of Pharmacy and Science and explained that I too was an apprentice with my father! So we had much in common even though we did not speak the same language and I lingered for an amusing chat in hog latin, Dutch, French, and every sign language we could use.

The toilet goods business in France is handled almost exclusively by perfume shops or large department stores something like our own department stores. The French also have beauty salons and hairdressing establishments which carry a rather complete stock of cosmetics, soaps, bath preparations, perfumes, shaving preparations, and manicure items. Yet I found some pharmacies in Paris which seem to be adopting American methods and a broader view of their field. Some of them are even selling fine soaps, especially Castile and surgical soaps; some have tooth brushes and dental preparations; and many have a limited stock of rubber sundries and sick room supplies. But these items are not merchandised and are only sold on call. Show windows and open display are yet a thing unknown to the French "pharmacie."

In England and the British Isles the chemist shops more nearly approach our American drug stores. Boots, Ltd., is a very progressive firm (perhaps due to American capital invested in it) and operates stores very much like our American chain stores. I noted one thing quite interesting in the Boots stores in London: a registered nurse is on duty along with the pharmacist or chemist and she has charge of all rubber goods, sick room supplies, surgical dressings, thermometers and related items. This gives a fine professional atmosphere to these merchandising departments and creates confidence on the part of the customer when he sees the nurse in her crisp uniform ready to serve him expertly. Other chemist shops in England are the usual small shop presided over by the dignified chemist. They sell very little merchandise other than drugs and maintain a very professional atmosphere.

Soda fountains are a thing unknown in most European countries. In Paris a large cafe installed an American fountain while I was living in a nearby hotel just across from the Luxembourg Gardens. And were they proud of it! They announced the fact to the world in blazing neon lettering by night and the crowds flocked to inspect it. I have often wondered if the popularity was prolonged. There really seems little need for the fountain in Europe when one

considers the wine tastes of Europeans. Coffee is a popular drink in all the cafes but the ice cream is atrocious. No wonder it is not popular as in America.

We found one so-called American drug store in Paris which catered to American tourists and was therefore located near the American Express office. We recognized it by the familiar Coca-Cola sign. The drink was delicious and refreshing to thirsty Americans even in a hot bottle and quite a luxury at five francs or about twenty cents at that time. Prices in this store were very high due to tariff and to their idea of the size of American pocket books so I decided to do as the Romans and put away my longings for my particular brands of tooth paste and chewing gum for the time.

The trip through the Pasteur Institute was perhaps the most interesting of all. I was very fortunate in having letters of introduction which gave me an entrance which I otherwise would not have had. It was indeed a privilege to see these laboratories; to talk with the director; to stand at the tomb of the great Pasteur; and to see the biological laboratories. The buildings are in a beautiful setting and an atmosphere of pure science pervades the entire place. One could not visit this wonderful institution without a feeling of reverence for the man who did so much for bacteriology and medical science.

European pharmacy and American pharmacy today are vastly different in methods and practice. Both have much that is good and each could learn much from the other. Perhaps some day we will have an international profession of pharmacy that will solve all the problems and build the ideal pharmacy best suited to the needs of mankind. Nothing could do more towards creating that ideal than the broadening influence of travel by members of the profession. Seeing how the other half lives is of unlimited value and I feel that I am a better, broader pharmacist after these rambles and explorations in European countries.

THE PHARMACEUTICAL APPLICATIONS OF SULFONATED LAURYL ALCOHOL AND KINDRED PRODUCTS*

By Ivor Griffith, Ph. M.

IN THE course of the past year or so there has been introduced into the textile trade a group of detergents and penetrants which represent a considerable advance over their cruder predecessors in the same field. These new compounds are available in the form of a fine white powder, soluble in water, and affording colorless neutral solutions.

They are prepared by sulfonating the synthetic higher aliphatic alcohols such as lauryl, oleyl, cetyl and stearyl alcohols. The sulfonation so conducted as to yield alcohol sulfuric acid esters and alkali salts having the general formula R OSO_3 Na.

Their unusual properties as textile assistants, particularly those with the lower number of carbon atoms in the homologous series (Cn H2n plus 1 OSO_3 Na) such as the derivatives of lauryl and oleyl alcohol suggested applications for them in the pharmaceutical and cosmetic fields.

Sulfonated lauryl alcohol in aqueous solutions possesses many valuable properties, among which special mention may be made here of the following:

1. It is exceedingly active as an emulsifying and cleansing agent. The surface tension against most dispersed phases, and particularly against olein and neutral fats, is considerably reduced, so that these fats are very easily converted into emulsions. Its high wetting-out power combined with its emulsifying and lathering power, makes it far superior to soap. It is superior to soap in its cleansing and degreasing properties even in distilled water.

2. Agitation in aqueous solutions gives lathers which are more permanent than those given by soap solutions.

3. It is neutral, *i. e.*, it exhibits a pH of about 7 but is entirely unaffected as regards inherent efficiency, whether used as pH 7, above this point, or below it. Thus it can be used with either mineral or organic acids (below pH 7); or can be used with ordinary soap, sodium carbonate or other alkaline solutions (above pH 7) while still retaining its excellent properties of cleansing, penetrating, etc.

*One of these compounds is that which is trade-marked Gardinol W A and which is available at a relatively low price (about 35¢ per pound).

4. It is stable under ordinary atmospheric conditions and does not oxidize and turn rancid with the development of objectionable color and odor, as is so often true of soap in certain combinations.

5. Solutions of salts of calcium, magnesium and many of the heavy metals are not affected by it.

The foregoing properties seem to confer on this and similar substances special applicability in the field of pharmaceuticals and cosmetics, particularly where used to replace soap.

Dental authorities have been somewhat antagonistic to the presence of soap in tooth powders and pastes. These sulfonated compounds have all the advantages of soap with none of its disadvantages, and are seemingly non-toxic.

Shampoos, shaving soaps and creams may be compounded with sulfonated lauryl alcohol resulting in non-alkaline products of high detergent qualities.

An unusual bland cleaning compound for painted surfaces is obtained by using the following formula:

Sulfonated lauryl alcohol	20 Gm.
Sheet gelatin	40 Gm.
Water	400 cc.

Dissolve with the aid of heat and pour into small 30 cc. molds and allow to set to a jelly.

One of these forms dissolved in a gallon of warm water produces a non-alkaline detergent fluid that is especially useful in cleaning painted surfaces.

It is not unlikely that the addition of this relatively inert compound to aqueous solutions of antiseptics may afford a liquid of low surface tension and consequent high penetrative qualities.

One attempt to substitute sulfonated lauryl alcohol for the soap used in making compound cresol solution met with failure.

Other applications may occur to other observers and the object of this brief paper is to bring the possibilities of these new compounds to the attention of persons who may have the opportunity for further studying them.

NEW PHARMACOPŒIAL STANDARDS FOR COD LIVER OIL*

THE NEW U. S. P. X (1934) Standards for Vitamins A and D and Vitamin Assays have just been published. These have been developed through a series of conferences with the vitamin experts of the United States and an extensive study of the general standard by the Sub-Committee on Organic Chemicals. The vitamin standards and vitamin assays represent the studies and conclusions of the U. S. Pharmacopœial Vitamin Advisory Board. The release of this announcement, as an interim revision, has been authorized by the U. S. P. Committee of Revision and U. S. P. Board of Trustees, the standards to become official on January 1, 1935.

The U. S. P. Vitamin Advisory Board also recently announced the release of "Reference Cod Liver Oils" of known vitamin A or vitamin D potency, expressed in U. S. P. X (1934) Units. These "Reference Oils" are to be used as standards in vitamin A or D assays for determining the potency of Cod Liver Oil, Cod Liver Oil Concentrates, irradiated ergosterol or other irradiated or vitamin A or vitamin D containing products, whether medicines or foods. This Reference Oil is obtainable in 30 cc. containers and is standardized for either its vitamin A or vitamin D potency. The price per package of either the vitamin A or vitamin D standard is $2.50.

The New U. S. P. X Cod Liver Oil Standards are as follows:

Minimum standard for Vitamin A for U. S. P. Cod Liver Oil. The minimum Vitamin A standard for U. S. P. Cod Liver Oil shall be not less than 600 U. S. P. (1934) Vitamin A Units or its equivalent, 600 International Vitamin A Units.

Minimum standard for Vitamin D for U. S. P. Cod Liver Oil. The minimum Vitamin D standard for U. S. P. Cod Liver Oil shall be not less than 85 U. S. P. (1934) Vitamin D Units or its equivalent, 85 International Vitamin D Units.

One "United States Pharmacopœia Unit of Vitamin A" is equal in growth promoting and antiophthalmic activities for the rat, to one International Unit of Vitamin A as defined and adopted by the Con-

*To become official January 1, 1935.

ference of Vitamin Standards of the Permanent Commission on Biological Standardisation of the League of Nations in June of 1931; one "United States Pharmacopœia Unit of Vitamin D" is equal, in antirachitic potency for the rat, to one International Unit of Vitamin D as defined and adopted by the Conference of Vitamin Standards of the Permanent Commission on Biological Standardisation of the League of Nations in June of 1931.

The Relation of the New U. S. P. Cod Liver Oil Vitamin Units to Other Units Now in Use.

One of the valuable contributions made by the U. S. P. Vitamin Advisory Board in its study of Assay reports submitted by many laboratories, when determining the potency of the U. S. P. Reference Cod Liver Oil, was an approximate relationship between the new U. S. P. X (1934) Units for Vitamins A and D (it should be remembered that these units are identical with the International Units) and other Vitamin Units now referred to on labels and in the literature.

These conversion factors have been published by the Vitamin Board with the hope that they may help clarify the existing confusion due to the use of so many unofficial units and with the hope that hereafter in this country all vitamin A and D values will be expressed in the new U. S. P. Units.

These conversion factors should not be considered as having any official recognition. They are probably not absolutely exact and are given for information only.

CONVERSION FACTORS FOR VITAMIN A AND D UNITS

Vitamin A Units

One U. S. P. X Vitamin A Unit, 1 "Sherman Unit" or *1 A. D. M. A. Vitamin A Unit* are each approximately the equivalent of 1.4 International Vitamin A Units or 1.4 U. S. P. X (1934) Vitamin A Units.

The new U. S. P. minimum standard of *600 U. S. P. X (1934) Vitamin A Units* per Gm. of Oil is approximately the equivalent of—

420 U. S. P. X (1926) VITAMIN A UNITS

Vitamin D Units

1 Steenbock Unit of Vitamin D is approximately the equivalent of 2.7 International or U. S. P. X (1934) Units.

1 International Vitamin D Unit or *1 U. S. P. X (1934) Vitamin D Unit* is approximately the equivalent of—

3.25 A. D. M. A. VITAMIN D UNITS

1 International Vitamin D Unit or *1 U. S. P. X (1934) Vitamin D Unit* is approximately the equivalent of—

1.66 OSLO VITAMIN D UNITS

The new U. S. P. minimum standard of *85 U. S. P. X (1934) Vitamin D Units* per Gm of Oil is approximately the equivalent of—

31.5 STEENBOCK UNITS
276 A. D. M. A. UNITS
142 OSLO UNITS

Copies of the U. S. P. X (1934) interim revision Cod Liver Oil Text or the Reference Cod Liver Oil may be obtained by addressing the Chairman of the Committee of Revision.

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SCIENTIFIC AND TECHNICAL ABSTRACTS

Compiled by Arthur Osol, Ph. D.

The Use of Adsorption Indicators in Argentiometric Assays. E. J. Schorn and W. S. Brown. *Pharm. Journ. 132,* 361 (April 7, 1934). The introduction of what are known as adsorption indicators is mainly due to Fajans and his co-workers; such indicators being particularly applicable to argentiometric assays. The general principles underlying their use may be understood by reference to the precipitation of halide by silver nitrate. The partly colloidal silver halide formed attracts ions to its surface; the ions adsorbed may be either halide or silver ions, according to the formation of the silver halide in the presence of excess of halide or excess of silver ions; and the colloidal silver halide becomes either negatively or positively charged respectively. The point at which reversal of charge takes place corresponds to the presence of equivalent amounts of halide and silver ions.

The dyes used as adsorption indicators are either weak acids or weak bases, and hence furnish charged ions in solution; adsorption of these ions also can, and does, occur. The anion from an acid dye is adsorbed under the same conditions as those holding when halide is absorbed, while the cation from a basic dye is adsorbed when silver ions are adsorbed. Fluorescein, dichlorofluorescein, and di-iodofluorescein are the most commonly used, and all these are weak acid dyes. While the mechanism of the color changes is not yet perfectly understood, the following explanation may indicate some of the changes which take place when sodium chloride solution is titrated with silver nitrate, using dicholorfluorescein as indicator. In the presence of a slight excess of chloride just before the equivalent point, there is a tendency for adsorption of both the chloride and dyestuff anions, the latter to only a small extent, and the colloidal silver chloride remains colorless, or nearly so. At exactly the equivalent point no inorganic ions are adsorbed, but when a slight excess of silver nitrate is added, silver ion is adsorbed and the rose pink color of the silver salt of dichlorofluorescein appears; this is the end point and is very sharp.

The Argentiometric Assay of Ammonium Chloride, B. P., 1932. E. J. Schorn and J. Y. Baird. *Pharm. Journ. 132,* 361 (April 7,

1934.) The method of assay of ammonium chloride introduced into the B. P. 1932, is open to objection for several reasons. It takes a longer time than a direct method, and error is introduced both by the filtration necessary and by adsorption of silver ions on the silver chloride precipitate. Kolthoff regards the latter error to be of the order of plus 0.7 to 1 per cent. The direct method of Mohr, using potassium dichromate, is restricted to solutions of pH 6.5 to 7.5, and since ammonium chloride solutions are approximately of pH 5 this method is unsuitable; the error introduced in this method by the fact that an appreciable quantity of silver nitrate must be added before the precipitated silver chromate can be observed may be neglected, provided that the solution has been standardized by the same means.

Using an adsorption indicator, Fajans and others have utilized the complications set up by this phenomenon of adsorption, so that the condition which gives rise to error in one type of titration becomes the fundamental factor for accuracy in another type. With this method, using dichlorofluorescein as the indicator, the end-point is sharp and obvious and only one titre solution is required. The analysis of ammonium chloride is carried out by adding 0.2 cc. of a 1-1000 dilution of dichlorofluorescein to the solution of the chloride to be titrated and adding standard silver nitrate solution to the formation of a delicate pink color. Excellent results were obtained.

The Catadyne Process of Water Sterilization. Chemical Age, 30, 318 (April 14, 1934). This process, based upon the bactericidal action of minute traces of silver ions, has recently been modified so as to do away with the necessity for the earlier somewhat cumbersome apparatus. By means of the electro-catadyne apparatus a controlled stream of silver ions is fed into the water from massive silver electrodes with the aid of a weak direct current. The maximum voltage for operation is only 1.6, thus avoiding any possibility of electrolytic decomposition. Low running costs and high efficiency are claimed for this plant. Thus, a fair-sized potable water sterilizing plant was run in a district notable for the softness of its water, effective sterilization being recorded when the quantity of ionic silver introduced into the water amounted to 30 to 50 milligrams per cubic meter. This proportion of metallic silver is far below the limit where toxic effects are likely to be induced in human beings or animals.

Gravimetric and Volumetric Determination of Mercury as Mercurous Iodate. G. Spacu and P. Spacu. *Z. Anal. Chem. 96,* 30 (1934) through *Analyst 59,* 199 (1934). The hot neutral or feebly acid solution of mercurous nitrate is treated, drop by drop, during agitation with excess of potassium iodate solution (0.35 gram per 100 cc.). The precipitate separates in the form of lustrous needles. After complete cooling (1 to 1½ hours) it is collected in a porous crucible, washed with water, alcohol and ether, dried in vacuo and weighed (mercury factor 0.5342). For the volumetric determination the mercury is precipitated with a known quantity of iodate, the excess being measured in the filtrate by adding iodide and dilute acid and titrating the liberated iodine with thiosulphate. The solubility of the precipitate was found to be 33.1 mgm. per liter at 15.5 degrees C.

The Estimation of Alkaloids by Displacement Titration. F. Schlemmer and H. Koch. *Arch. Pharm. 272,* 394-405 (1934). The authors call attention to the researches of Willstätter and Waldschmidt-Leitz in which strongly alcoholic solutions of ammonium salts were titrated with acid in the presence of phenolphthalein indicator. Alcohol possesses the property of lowering the basic dissociation constant of nitrogen containing bases. Thus Vorländer found that strong alcoholic solutions of ammonia are no longer alkaline in reaction.

Linderstrøm-Lang has also devised a method for determining basic groups in amino acids, dipeptides, etc., by adding 90 per cent. of acetone and titrating with N/10 alcoholic solution of hydrochloric acid.

Schlemmer and Koch have applied these principles to the titration of alkaloids and alkaloidal salts. Strychnine nitrate, yohimbine hydrochloride, brucine nitrate, tropine hydrochloride and other salts containing strong acid anions were determined by titration of the alcoholic solution with alcoholic potassium hydroxide in the presence of phenolphthalein. A potentiometric method is also applied in which the alcoholic solution of the alkaloidal salt is titrated to zero difference of potential against a reference electrode dipping into a buffer solution of pH 8.4.

To titrate alkaloidal bases, the latter were converted to acetates or lactates and then titrated in acetone solution with an acetone solu-

tion of hydrochloric acid. A potentiometric method has also been used for this type of titration. Good results were obtained in nearly all experiments.

Deuterium Measures Efficiency of Catalysts. Science News Letter (April 28, 1934). Heavy hydrogen (deuterium), with atoms double the weight of ordinary hydrogen, has been studied by science for hardly more than a year, yet it has already found one use of both scientific and eventual economic importance. This was described before the meeting of the American Philosophical Society by Prof. Hugh S. Taylor of Princeton University.

The new double-weight twin of hydrogen is used to measure the efficiency of various kinds of surfaces on which chemical reactions involving hydrogen are hastened. These surfaces, collectively known as catalysts, are of great importance in industry as well as in the laboratory; modern chemical engineering and manufacturing could not exist without them.

The method of measuring the efficiency of hydrogenating surfaces used by Prof. Taylor is simple. He applies to such surfaces a mixture of hydrogen molecules, each consisting of two light-hydrogen atoms, and deuterium molecules, each consisting of two heavy-hydrogen atoms. The action of the surfaces brings about a regrouping of part of the gases, forming molecules consisting of one heavy-hydrogen atom and one light-hydrogen atom each. The efficiency of any given surface is measured by the rate at which this transformation takes places.

SOLID EXTRACTS

PARAPHENETOLTHIOUREA is the name of a new synthetic over the taste of which there is a decided difference of opinion. Four out of ten persons will swear that it is tasteless, and six will swear at its bitterness.

Color blindness has long been familiar to us—taste "blindness", except the influenzal kind, has never been recognized—but here is a chemical which actually classifies the race into a group in good taste and another with no taste at all. Yet we are informed that no generalizations or conclusions can be reached as to the differential value of the test, since the reactions seem to be confined to this particular chemical.

One of the most up-to-date and successful methods of treating peritonitis is the "inside hot-water bag" method, whereby a sterile bag, placed inside the peritoneal cavity is filled with hot water which is circulated therein, and the temperature gradually elevated, sometimes beyond the 140 degrees F. mark. Post abortional pelvic infections have been very successfully treated with this heat method. Electrically generated heat within the body cavities is also coming to the front as a modern elaboration of grandmother's old-fashioned poultices in the treatment of pneumonias, etc.

They talk about a Chinaman's chance!! And the richer and sicker he is, the poorer his chance. A sick Chinaman, if wealthy, is attended upon by ten or twelve doctors each of whom will feel his pulse and touch his purse. Each will leave his own special prescription. Next on the scene is the necromancer, who arranges the prescriptions in a circle, mutters a lot of ong-ongs, then selects, for no reason in the world, one of the cabalistic messes.

It is promptly compounded at a nearby pharmacy. If the patient recovers, the doctors fare well—if he dies—farewell necromancer.

One of the "interesting scientific *facts" recently announced by the Listerine Research Laboratories, and which bids fair to prove an epoch-making discovery in the annals of halitology, is that "onion breath is caused* not *by onion residue in the stomach, but by bits of onion left on the teeth and gums!!"*

Our recollection of the last sacrifice we made at the allic altar is that the recurring taste of the tender young scallions did come from onion residues in the stomach for it could be tasted clear all the way up the gastronomic chute.

Ambergris, that valuable perfume constituent, was for centuries considered to be the congealed excrement of a large sea bird—which, must have been a bird of a bird—when it is remembered that single lumps of the product weighing as high as 200 pounds, have been picked up at sea. Now it is known to be a pathologic growth regurgitated or untimely passed by the gentleman sperm whale, after he has unwisely overindulged in a diet of squid (cuttlefish). That explains why this substance once prized more highly than gold, contains great numbers of the horny beaks or mandibles of the cuttlefish.

Pyramidon, and some of the barbiturates, are now said to be dangerous medicines when used too frequently. They work a specific injury on the bone marrow, where blood cell manufacture is carried on, and cause a definite decrease in the number of white blood cells.

The use of pyramidon either alone or in combination with other drugs, should be restricted to patients having white blood cell counts made several times a week, warns the Journal of the American Medical Association.

Another proof of the assertion that man's development has somewhat frankensteined his destiny is offered in the following statement. Monkeys that became drug addicts in the cause of science were recently shown on the moving picture screen for the benefit of members of the Federation of American Societies for Experimental Biology. The monkeys had become addicted to morphine, codeine, heroine and dilaudid, Dr. M. H. Seevers of the University of Wisconsin reported.

They behaved just as human addicts do when the drug is withdrawn, with one exception. The monkeys, however, never learned to crave the drug to which they were addicted. Neither did they learn to associate the drug with relief from the distress they seemed to suffer when it was withdrawn.

Daily ingestion of small quantities of aluminum, such as might result from the use of aluminum cooking utensils or of certain chemical yeasts containing aluminum, is not dangerous and does not induce cancer, as some have feared.

This is the conclusion arrived at by Drs. Gabriel Bertrand and Pierre Serbescu of the University of Paris as the result of experiments on rabbits, which they have recently reported to the Paris Academy of Sciences.

These experiments seem to confirm the results of American investigators who greatly to the joy of the Aluminum Corporation of America found aluminum cooking utensils harmless.

From astonished cows came the garish paint that covers, in and out, the giddy, gaudy buildings of the Century of Progress Exhibition in Chicago. Casein (cheese) and high power aniline lakes and pigments are the basis of these valuable light-reflecting paints. Casein paint is said to be highly resistant to the accumulation and retention of dirt and grime.

MEDICAL AND PHARMACEUTICAL NOTES*

The Comparative Antisepic Action of Ointments and Related Products. By Arthur H. Bryan.

Eighty odd ointments including U. S. P., and N. F. preparations and face creams were tested for their bactericidal activity as shown by their ability to inhibit the growth of cultures of pus producing staphylococci on blood serum agar. The United States Health Department, cup and smear methods, were used for the test with some technique modifications devised in order to standardize the results. Actual photographs and stereoptican slides of the plates were made in evidence of the conclusions drawn. In an effort to substantiate laboratory findings, some clinical observations, and animal inunctions were made to determine whether ointments in medical and animal practice underwent deterioration.

The conclusions resulting from running several batches of ointment under varying conditions indicate that .5 and 1 per cent. U. S. P. and N. F. ointments showed no antiseptic action.

The U. S. P. and N. F. ointments in various bases at 5 and 10 per cent. strengths, all showed well defined bactericidal activity.

The most satisfactory bases as indicated by diffusion and inhibition appeared to be Lanolin and Benzoinated lard.

The iodine and mercurial ointments showed the greatest consistent antiseptic strengths as indicated by the width of the inhibition and diffusion zones.

The smear method of testing antiseptic action was also valuable for determining the activity of tooth pastes.

Some ointments, such as Boric acid, zinc oxide, and chrysarobin showed no antiseptic action.

The mercurial ointments did not show any deterioration over a period of ten years while the others showed decreased or no activity on standing.

This study indicates the advisibility of preparing and dispensing fresh ointments.

*All these abstracts are of papers presented before the several sections of the 1934 Convention of the American Pharmaceutical Association, in whose Journal the original articles will eventually appear.

Some Considerations of Silver Picrate. John G. Bird and Alfred Barol.

A brief review of the scanty data available in the literature is given. Standard methods of preparation are limited by various factors such as low solubility in aqueous and the customary organic solvents, complicated by gradual hydrolysis in the former, influence of heat, light, organic matter, etc.

A new method of preparation is described, utilizing a nonaqueous vehicle (diethylene glycol ether) which possesses remarkable solvent power for silver picrate.

Chemical and physical data are given together with application of the method and product to the rapid preparation in the cold of alkaryl picric ethers and other derivatives.

Results of pharmacological, bacteriological and clinical studies show silver picrate to occupy an intermediate position between the strongly germicidal but caustic and irritating silver nitrate and the mildly germicidal but colloidal silver preparations.

The compound combines the useful properties of each constituent and should form a desirable addition to medical armamentaria.

Some Observations on the Stability of Quinine Sulphate During Storage. By L. E. Warren.

Seven packages of freshly prepared quinine sulphate were stored under conditions simulating those obtaining in prescription dispensing. The packages were opened at various intervals and small portions removed from the surface of the material without disturbing the remainder. The intervals from opening to the time when the product became stable (ceased to lose weight) were recorded. In a climate comparable to Washington, D. C., the salt progressively loses water of crystallization until after 4 to 12 months it contains about two molecules (4.6 per cent.) after which it remains practically stable.

The Water of Crystallization of Quinine Sulphate. By H. Wales.

Drying a product in an oven shows the amount of water present but does not prove that it is present as a hydrate. Vapor pressure measurements on quinine sulphate show that it crystallizes from water at room temperature as the octohydrate. Upon drying this passes directly to a dihydrate. No evidence of the existence of a heptahydrate was obtained.

Pharmaceutical Applications of a Quantitative Barbiturate Test. By James M. Dille.

A chloroform solution of a barbiturate is treated with 0.05 cubic centimeters of cobalt acetate in absolute methyl alcohol and 0.3 cubic centimeters of 5 per cent. isopropylamine in absolute methyl alcohol. The resulting color is compared in the micro cups of a colorimeter with a standard. This test can be used to determine the barbiturate present. It may be used to determine the strength of an unknown solution of a barbiturate, or the amount of barbiturate in any solid preparation.

A Chemical Examination of the Entire Plant of Celastrus Scrandens. By Nellie Wakeman, Carl Buhler, Harvey Kimbel, Albert Niebaur, Andrew Ruzek and Vincent Wasz.

The plant was collected and separated into leaves, fruit, bark, wood, and root, each of the five students being given a part for investigation. The work, though still in the preliminary stages has yielded some interesting products.

1. From the leaves and the bark and wood of the stems there has been obtained a fat soluble, unsaponifiable product which is precipitated by digitonin and gives the color reactions for sterols.

2. From the leaves, the bark and wood of the stems and the woody portion of the root there has been isolated a white crystalline product which melts at 185-186. It has a slightly sweetish taste and does not reduce Fehling's solution. Upon hydrolysis, however, it has reducing properties and it yields an osazone which melts at 190-191. The osazona has the crystalline form of galactosazone.

3. From the petroleum ether extract of the bark of the root there separated beautiful, large, ruby red crystals which have the melting point and the crystalline form of beta carotene.

4. By extraction with petroleum ether there has resulted, from both the outer husk and the arillus of the seed, a mixture of fat like consistency containing both red and yellow pigmented materials.

The Detection of Rosin in Balsams. By George D. Beal and Chester R. Szalkowski.

The copper acetate test for rosin in balsams is not regarded as satisfactory because any organic acid soluble in the solvent vehicle

will react with copper to produce the green color. The Storch-Morawski test for rosin acids, with acetic anhydride and sulphuric acid, is not interfered with by the common organic acids. Some of the constituents of the common balsams interfere in this test. If, however, the balsam be fractionated with an organic solvent such as petroleum benzin, the extract responds to the test only when rosin or rosin oil has been added. The test has been applied with success to Balsam of Peru, storax and tolu. Genuine copaiba contains a resin acid that duplicates abietic acid in its reaction, therefore a further search is being made for a method of detecting rosin in copaiba. Details of procedure are given.

The Stabilization of Syrup of Ferrous Iodide. U. S. P. X, by William J. Husa and Lyell J. Klotz.

A study was made of the mechanism and rate of decomposition of ferrous iodide solutions and syrups. The decomposition involves a partial hydrolysis of ferrous iodide, oxidation of iodide ion and oxidation of iron. The oxidation of iodide ion was found to be a reaction of the first order with a specific reaction rate of 3.2 x 10-5. An intensive study was made of the deterioration of syrup of ferrous iodide, U. S. P. X. It was found that a stable syrup may be prepared by using dextrose in place of sucrose.

Further Studies on Psyllium. By H. W. Youngken.

Plants with mature fruiting spikes and seeds were obtained by the author from growers of commercial psyllium seed in Spain and France, identified by comparison with authentic herbarium sheets and authoritative descriptions in the literature. The seeds were separated from these and compared with commercial lots of psyllium on the American market, thus permitting certain identification.

The seeds of plantago psyllium, plantago arenaria and plantago cynops are compared as to physical characteristics, histological detils, relative weight and mucilage swelling capacity.

It was found that most of the samples of commercial Spanish psyllium examined by the author were yielded by plantago psyllium, a few by P. arenaria, that most of the recent French psyllium samples were yielded by plantago arenaria, a number of P. psyllium,

while occasional lots represented varying mixtures of P. psyllium, P. arenaria and P. cynops. It was also ascertained that the seed of plantago lanceolata, described by the author in a previous article is being offered to the American trade both as Spanish psyllium and German psyllium as well as torrefied abroad and mixed with untorrefied seed of plantago arenaria and offered in this combination to the French and American trade as French or black psyllium seed.

Deterioration and Stabilization of Aconite Preparations. By William B. Baker.

Based on the data obtained in experimental studies, the stabilizing effect of the addition of acids to aconite preparations is clearly shown. To carry out these studies, a tincture was prepared in strict accordance with the U. S. P. X procedure for tincture of aconite. This tincture, which showed a potency of 114 per cent. when assayed by the U. S. P. X method for tincture of aconite, was divided into small portions. Each of these small portions, except one, which was used as a control, was acidified with a definite amount of hydrochloric, acetic, or hypophosphorous acid, and the pH values determined within a day or two. The central portion showed rapid and extensive deterioration, and, when assayed after standing six months at room temperature, its potency amounted to less than 50 per cent. Another portion, properly protected with hydrochloric acid, appears to have been afforded complete protection by the acid over a period of fifteen months. The use of acetic acid as a stabilizer, although retarding deterioration to a moderate extent when added in sufficient amount, was found to be impractical because of the large amount required to adjust the preparation to the desirable hydrogen ion concentration (approximately pH 2.30) hypophosphorous acid, likewise, afforded only moderate protection. In order to provide, as much as possible, against assay errors due to variation in susceptibility of guinea pigs, caused by health abnormalities not readily apparent, a suitable bioassay standard should be employed. Crystalline aconitine, being the chief active constituent of aconite, is representative of the activity of aconite preparations, and constitutes the most satisfactory standard, found up to the present time, providing it is kept under conditions insuring its stability.